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Introduction: The pear *Pyrus boissieriana* Buhse is a species of pear that belongs to the plant family Rosacea that grows in northern Iran and Turkmenistan.The pear leaves are useful for treatment of inflammation of bladder bacteriuria, high blood pressure and decrease blood sugar. Hep-G2 is a perpetual cell line which was derived from the liver tissue of a 15 year old Caucasian American male with a well differentiated hepatocellular carcinoma. HepG2 cells are a suitable in vitro model system for the study of polarized human hepatocytes. The purpose of this study was to examine the in vitro cytotoxicity of *Pyrus boissieriana* Buhse leaves extract on human hepatoblastoma HepG2 cells.

Materials and methods: In this study Hep-G2 cells growing in RPMI 1640 with 10% FBS for determination of the cytotoxicity measured by MTT assay. MTT assay is colorimetric assay for measuring the activity of enzymes that reduce MTT or close dyes (XTT, MTS, and WSTs) to formazan dyes, giving a purple color. Cells were cultured in 24 well plates. After cell treatment with different concentration of *Pyrus boissieriana* Buhse leaves extract, MTT assay was performed. Different concentrations such as 0.02%, 0.05%, 0.2%, 0.5%, 1%, 1.5% and 2% were tested.

Results: We have seen different results from different concentrations. These findings show that *Pyrus boissieriana* Buhse leaves extract concentrations lower than 1% was noncytotoxic ($P = 0.037911$). Most cytotoxicity was seen in 2% concentration and there is no difference between .02% and .05% concentrations in comparison with the control group.

Keywords: Hep-G2 cell line, Cytotoxicity, *Pyrus boissieriana* Buhse leaves extract, MTT assay

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Poster — [A-10-973-1]
Assessment of *Pyrus boissieriana* Buhse leaves extract cytotoxicity to HeLa cell line

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Introduction: *Pyrus boissieriana* Buhse is belonging to Mazandran junglese, the plant are medium size trees that can reach 5 m in height. The leaves of this tree contain a considerable amount of Arbutin. Hela are adherent, epithelial-like cells growing as monolayers. The aim of this study was to detect cytotoxicity in vitro. MTT assay is colorimetric assay for measuring the activity of enzymes that reduce MTT or close dyes (XTT, MTS, and WSTs) to formazan dyes giving a purple color.

Method and material: Hela cells were grown in RPMI 1640 in standard condition. Different concentrations of this extract were added to 24-well plates, then cytotoxicity evaluate after 24 h by MTT test. Concentrations such as: 0.02%, 0.05%, 0.1%, 0.2%, 0.5%, 1%, 1.5%, and 2% were tested.

Result and discussion: These findings show that *Pyrus boissieriana* Buhse leaves extract concentrations above 0.5% was cytotoxic. ($P = 0.00136$). Most cytotoxicity was seen in 2% concentration. There is no difference between 0.02% and 0.05% concentrations with control.

Keywords: MTT assay, HeLa cell line, Cytotoxicity, *Pyrus boissieriana* Buhse leaves extract

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Poster — [A-10-997-1]
Protective role of vitamin E on diazinon induced oxidative stress in rat kidney

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Introduction: Many insecticides such as diazinon (DZN) are hydrophobic molecules, which bind extensively to biological membranes, especially to the phospholipids bilayers. Vitamin E (α-tocopherol) is the major lipid-soluble antioxidant and is known to protect cellular membranes and lipoproteins from peroxidation. The present study aimed to investigate the cytotoxicity of DZN and the protective role of vitamin E on lipid peroxidation and antioxidant enzymes of rat kidney.

Materials and methods: Male Wistar rats were randomly divided into four groups including: control (corn oil as diazinon solvent), DZN group (100 mg/kg, i.p.), vitamin E (150 mg/kg, i.p.) group and vitamin E–DZN group. 24 h after injection of ether anesthesia to the animals, the kidney was removed. After tissue hemogenation, superoxide dismutase (SOD) and catalase (CAT) activities, as well as GSH and malondialdehyde (MDA) levels were determined by biochemical methods.

Results: DZN decreased GSH level in kidney, however, vitamin E–DZN pretreated rats showed increased GSH content. The increased SOD and CAT activities and MDA level in DZN treated rats as compared to control appears to be a response towards increased oxidative stress. Vitamin E pretreated animals showed a lowering in these parameters as compared to DZN-treated rats which indicate that vitamin E provides protection against DZN-induced oxidative stress.

Conclusion: The data suggest that vitamin E may amelierate DZN-induced oxidative stress by decreasing lipid peroxidation and altering antioxidant defense system in kidney.

Keywords: Diazinon, Vitamin E, Antioxidant system, Kidney, Rat

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Poster — [A-10-1026-3]
Cytotoxicity of methylsulfonylmethane (MSM) on esophageal cancer cell line (KYSE30)

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Introduction: Esophageal cancer is a relatively rare form of cance. Esophageal cancer have been considered as a chemosensitive tumors for many years. Methylsulfonylmethane (MSM) is an organic form of sulfur that can be dietary supplement to support proper joint, connective tissue and skin health. MSM is considered to be one of the least toxic substances in biology. The researchers concluded that MSM significantly lengthens the time of tumor onset compared to the controls. Considering preventive effects of MSM on tumor onset and non toxic to healthy body and hence chemosensitive properties of esophageal tumor, we investigated cytotoxic effects of MSM on this cancer.

Method and materials: MSM was prepared in 50 mg/ml concentration with RPMI 1640. Kyse30 cell line was plated in 96-well plates and incubated for an overnight. Plates were treated with MSM by initial concentration of 50 mg/ml with ¼ serial dilution and incubated for 24, 48 and 72 h. Cytotoxicity of MSM was examined by MTT, neutral red and protein measurement assay.

Results: MSM had shown cytotoxic effects on esophageal cancer cell line after incubation times. IC50 values for KYSE-30 cell line were determined to be 37.06, 25.6 and 24.58 mg/ml after 24, 48 and 72 h respectively.

Conclusion: MSM had cytotoxic effects on esophageal cancer cell line. These findings provide a new understanding of the cytotoxic effects on esophageal cancer cells caused by MSM. Although MSM is not a very potent toxic agent, but as a food supplement and non-toxic to human body it can be used as adjuvant chemotherapy agent.

Keywords: Methylsulfonylmethane, MSM, Esophageal cancer, Cytotoxicity

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Poster — [A-10-1042-5]

The investigation on antioxidatve activity of two plants of *Trigonella foenum graecum* and *Mentha pulegium*

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Background: The usage of the leaves of *Trigonella foneum graecum* and seed of *Mentha pulegium* was very common in traditional medicine. Even nowadays the use of these plants is usually due to their laxative, resolvent, and antitussive features. Antioxidants prevent the oxidative damages caused by free radicals and could be used in inflammatory and cardiovascular diseases. However, the use of synthetic antioxidants could cause side effects such as cancer, and for this reason vast studies are done in order to replace the synthetic antioxidants by natural ones. In this study, the antioxidant feature of these two plants, which were used since old times, is investigated.

Methods: Rosemary is chosen as testifier, since its antioxidant property has been proven. Sativum (brewed) and alcoholic extract of rosemary, *T. foenum graecum*, and *M. pulegium* with same concentrations, are evaluated by copper ion reduction test.

Results: It was found that the antioxidant capacity of the alcoholic extract of *T. foenum graecum* and *M. pulegium* are high, but the antioxidant power of sativum of *T. foenum graecum* is low while the sativum of *M. pulegium* has the same potential property of alcoholic extract.

Conclusions: *Mentha pulegium* and alcoholic extract of *T. foenum graecum* have considerable antioxidant features and could be used as natural resources for antioxidants. Regarding to these results, it is recommended that further studies and research to be conducted on pharmacological and biological features of alcoholic extract of the most plants, especially those which had been used mainly in traditional medicine.

Keywords: *Trigonella foenum graecum*, *Mentha pulegium*, Antioxidative activity, Traditional medicine

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Poster — [A-10-1043-1]

Grafting of gold complex on nano-porous MCM-41 and evaluation of its toxicity in *Saccharomyces cerevisiae* as a model system

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Introduction: Over the past few decades, gold nanoparticles with a novel functionality due to their nano scale size and distinct physical, chemical and biological properties have elicited much interest. Here 2, 4, 6-trimethyl pyridine are conjugated with $HAuCl_4$ to produce trichlorido (2, 4, 6-trimethyl pyridine) gold (III) complex. To provide an efficient amount of trichlorido (2, 4, 6-trimethyl pyridine) gold (III) inside the living cells, the complex was loaded on MCM-41 as a drug delivery system.

Experimental complex: A solution of 2, 4, 6-trimethyl pyridine in methanol (10 ml) was added to a solution of $HAuCl_4$, $3H_2O$ (2 mmol,0.8 g) in 10 ml of acetonitrile.

Grafting: 1 g of the dried as-synthesized PF-MCM-41 was treated with equivalent mole of $HAuCl_4$, $3H_2O$ in the presence of 25 ml dried methanol. The suspension stirred and then was washed with water and after filtration and drying under vacuum the $AuCl_3$@ PF-MCM-41 was obtained.

Results: Our data in comparison with gold III nanoparticles, $HAuCl_4$, reveals the toxic effects of trichlorido (2, 4, 6-trimethyl pyridine) gold (III) on *Saccharomyces cerevisiae*. In addition they confirms the role of MCM-41 in delivering of trichlorido (2, 4, 6-trimethyl pyridine) gold (III) nanoparticles to their targets in cells.

Discussion: The extremely high cyto-toxicity of the $AuCl_3$ @ PF-MCM-41 (in target tumor cells) and low cyto-toxicity of trichlorido (2, 4, 6-trimethyl pyridine) gold (III) (in case of undesired release of the nano compound under physiological conditions) suggested the potential of trichlorido (2, 4, 6-trimethyl pyridine) gold (III) to be used as cell killer for cancer therapy.

Keywords: Gold complex, Nano-porous MCM-41, Toxicity, *Saccharomyces cerevisiae*

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Poster — [A-10-1140-1]

Biodegradation of diazinon by bacteria isolated from rice field in North Iran

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Introduction: Organophophorous compounds are widely used as pesticides for agricultural products. Their mechanism of action is generally laysed on AcE inhibition, which leads to acetylcholine accumulation at the synaps site, muscular contraction, at the end respiration blockage and pest death.

Methods: Several techniques for environmental cleaving from organophosphorous pollution are used, but biological methods are considered to be the most important. Microorganisms living in soil and water use the organophosphorous compounds as source of carbon, nitrogen, phosphorous, sulfur, and energy for their vital functions through enzymatic transformation with OPH enzyme. OPH is generally extracted from microorganisms such as *Pesudomonas* sp. which is isolated on specific culture media from soil and paddy water of rice fields that were previously treated with diazinon.This microorganism are able to break P–O, P–S and P–CN bonds by producting OPH. The metabolic activity is characterized by a transparent circular area around the colonies, that would gradually raise its size too. In the next experiments we studied, diazinon was applied in the autoclaved and nonautoclaved samples of two neutral soils.